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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,585	06/26/2003	Robert A. Cochran	200310029-1	8427

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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER
HIGA, BRENDAN Y

ART UNIT	PAPER NUMBER
2153	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>26 June 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-30</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>26 June 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

This communication is in response to the application filed on June 26, 2003.

Claims 1-30 are pending.

Priority

No claim for priority has been made in this application.

The effective filing date for the subject matter defined in the pending claims in this

application is June 26, 2003.

Drawings

The Examiner contends that the drawings submitted on June 26, 2003 are acceptable

for examination proceedings.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or

composition of matter, or any new and useful improvement thereof, may obtain a patent

therefor, subject to the conditions and requirements of this title.

Claims 25-29 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. The claimed invention is directed to a article of

manufacture comprising: "a controller usable medium", however, page 21 of the

applicant's specification provides evidence that the applicant intends for the controller

usable medium to include propagation, communication, or transport mediums (i.e.

electronic, magnetic, optical, electromagnetic, infrared signals) which are non-statutory

under 35 U.S.C 101.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 11-13 and 28-29 are rejected under 35 U.S.C. 102(e) as being anticipated

by Sharma et al. (US 7184402), hereafter referred to as Sharma.

As per claims 11 and 28, Sharma teaches communicating data among a network

infrastructure via a plurality of communication links (link bundle, see abstract), a code

capable of causing the controller to interconnect a plurality of communication links

between a local array and a remote array (see Fig. 1, ref. 130 and 131, and "buffers"

see col. 3, lines 55-60, "array data structures" col. 6, lines 61-67); a code capable of

causing the controller to maintain a list of links available to carry the data (see "A", "B",

and "C", col. 5, lines 33-45); a code capable of causing the controller to include a link on

the list when the link becomes available (see col. 5, lines 47-53); a code capable of

causing the controller to activate the next available link on the list (see col. 5, lines 54-

63); and a code capable of causing the controller to send data over the activated next

available link (see col. 5, lines 54-63).

As per claims 12, 13 and 29, Sharma further teaches causing the controller to receive

the sent data at the remote array (see col. 3, lines 55-60 and col. 6, lines 60-67);

capable of causing the controller to reorder the received data into a proper order at the

remote array (see col. 3, lines 55-60 and col. 6, lines 60-67); and capable of causing the

controller to destage the reordered data to disk in a data replication application (see Fig.

1 ref. 130, and 131, wherein fragments 10-15 are replicated from data processing

engine 135 to data processing engine 140, read as a data replication application).

**Claims 1, 14, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by
Counterman (US 6222858).**

As per claims 1 and 25, Counterman, teaches a method of interconnecting a network

infrastructure via a plurality of communication links comprising: classifying the plurality

of communication links according to a link affinity grouping (IMA group or sublayers 252,

see col. 6, lines 27-col. 7, line 6); enabling and disabling selective ones of the plurality

of communication links according to the link affinity grouping (according to Quality of Service requirements, col. 1, lines 24-29, col. 2, lines 10-14, and col. 6, lines 34-37); and activating a particular link selected from among the enabled communication links using a selection process adapted to characteristics of the link affinity grouping (see col. 6, lines 11-25).

As per claim 14, Counterman teaches an interface capable of interconnecting a network infrastructure via a plurality of communication links (see Fig. 3, col. 6, lines 8-25), the plurality of communication links having a diversity of data-carrying capacity and performance (see col. 5, lines 8-17); and a controller coupled to the interface that assigns the plurality of communication links into at least one link affinity group based on performance criteria and controls link selection based on link affinity group assignment (according to Quality of Service requirements, col. 1, lines 24-29, col. 2, lines 10-14, and col. 6, lines 34-37).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims 2-4, 8, 9, 15, 16, 18, 20, 21, 23, 26, 27 and 30 are rejected under 35 U.S.C.

103(a) as being unpatentable over Counterman (US 6222858) in view of

MacFarlane et al. (US 6516348), hereafter referred to as MacFarlane.

As per claims 2 and 15, Counterman does not expressly teach analyzing performance

of the enabled communication links individually and in aggregate.

However, in the same art of network resource managing, MacFarlane teaches a method

of monitoring bundled WAN links, wherein the links are monitored individually, but upon

display the system presented by MacFarlane combines the individual links to present a

user with an aggregate display of the total available bandwidth across the bundled WAN

links (see col. 6, lines 6, lines 10-29).

One of skill in the art would have been motivated to combine the teachings of

Counterman with the teachings of MacFarlane in order to provide the system presented

by Couterman with a meaningful way of determining aggregate qualities of link

groupings.

As per claims 3 and 30, Counterman in view of MacFarlane teaches the invention

substantially as claimed as noted above. Furthermore MacFarlane further teaches

determining whether the aggregate performance has declined to below a predetermined

limit (see col. 5, lines 35-50).

The same motivation that was utilized for combining Counterman and MacFarlane in

claim 2 applies equally well to claim 3.

As per claim 4, MacFarlane further teaches the step of generating an alert signal when

the aggregate performance declines to below the predetermined limit (see col. 2, lines

23-48).

The same motivation that was utilized for combining Counterman and MacFarlane in

claim 2 applies equally well to claim 4.

As per claims 8, 21, and 26 Counterman further teaches recommending, based on the

analysis, appropriate individual links for inclusion into a link affinity grouping based on

criteria selected from among a group consisting of: potential throughput, link path

security ratings, logical unit (LUN) group criticality ratings, potential throughput

according to the link selection process, link cost, link availability, primary and secondary

replication classification, inclusion or exclusion of multiple link affinity groups, inclusion

of partial or full link affinity groups, and link direction (Quality of Service requirements, col. 1, lines 24-29, col. 2, lines 10-14, and col. 6, lines 34-37).

As per claims 9 and 23, Counterman further teaches determining, based on the analysis, whether altering assignment of links of two link affinity groups will improve throughput of both groups (see col. 4, lines 34-39, and col. 6, lines 8-47).

As per claims 16, 20 and 27 Counterman further teaches the controller manages synchronous and unordered asynchronous disk array replication by communicating data over all available links in a round-robin order ("during sequential round robin cycles", see col. 10, lines 1-8)

Counterman does not expressly teach determining whether the aggregate performance has declined to below a predetermined limit, and generates an alert message for performance declines below the limit.

However, in the same art as noted above, MacFarlane teaches generating an alert signal when the aggregate performance declines to below the predetermined limit (see col. 2, lines 23-48).

The same motivation that was utilized for combining Counterman and MacFarlane in claim 2 applies equally well to claims 16 and 27.

As per claim 18, Counterman further teaches the controller manages ordered asynchronous disk array replication by enabling and disabling selective ones of the plurality of communication links according to the link affinity grouping (according to Quality of Service requirements, col. 1, lines 24-29, col. 2, lines 10-14, and col. 6, lines

34-37), and activating a particular link selected from among the enabled communication links using a selection process adapted to characteristics of the link affinity grouping (selected based on certain FEC parameters, col. 6, lines 8-13).

Claims 5-7, 17, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Counterman (US 6222858) in view of MacFarlane (US 6516348), in further view of Lancon et al. (US 6647028), hereafter referred to as Lancon.

As per claims 5, 17, and 22 the combination of Couterman and MacFarlane does not expressly teach identifying an individual link wherein, based on the analysis, disabling of the identified link from the aggregate in the link affinity grouping will improve aggregate throughput.

However, in the same art of network resource management, Lancon teaches a method of monitoring aggregated physical links, including the step of identifying an individual link wherein, based on an analysis, disabling of the identified link from the aggregate will improve aggregate throughput (see col. 2, lines 33-61 and col. 3, lines 45-64, wherein based on the detection of a failure of one or more of the links the available aggregate bandwidth is readjusted to the remaining links, read as disabling the identified link from the aggregate).

One of skill in the art would have been motivated to combine the teachings of Counterman and MacFarlane with the teachings of Lancon in order to improve bandwidth utilization of a link grouping.

As per claim 6, Lancon further teaches automatically disabling the identified link (see col. 3, lines 55-64).

The same motivation that was utilized for combining Counterman, MacFarlane and Lancon in claim 5 applies equally well to claim 6.

As per claim 7, Lancon further teaches recommending disabling of the identified link (read as a signal for triggering the automatic adjustment of bandwidth, see col. 3, line 64 – col. 4, line 2).

The same motivation that was utilized for combining Counterman, MacFarlane and Lancon in claim 5 applies equally well to claim 7.

Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Counterman (US 6222858) in view of MacFarlane (US 6516348), in further view of Sharma (US 7184402).

As per claims 10 and 19, Counterman further teaches maintaining a list of available links (see Fig. 4 and Table 1, col. 6, lines 50-63); including a link on the list when the link becomes available ("links added", see col. 7, lines 14-22); activating the next available link on the list (see col. 10, lines 1-8); sending information over the activated next available link ("during sequential round robin cycles", see col. 10, lines 1-8);

As per claims 10 and 19, Counterman does not expressly teach the step of receiving

the sent information at a remote site; and reordering the received information into a

proper order at the remote site.

However, in the same art of link management, Sharma teaches a method of distributing

multilink frame relay fragments across a multiple links, having diverse transfer speeds

(see col. 3, lines 20-26), including a receiver buffer on a receiving data processing

engine for reordering the delivered frames into a proper order (see col. 3, lines 55-60

and col. 6, lines 61-67).

One of skill in the art would have been motivated to combine the teachings of

Counterman and MacFarlane with the teachings of Sharma, in order to improve the

distribution and transfer of frames across a plurality of links having diverse transfer

speeds.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Counterman (US 6222858) in view of MacFarlane (US 6516348), in view of Sharma

(US 7184402), in further view of Kwon (US 6643709).

As per claim 24, Counterman in view of MacFarlane teaches the invention substantially

as claimed as noted above. Furthermore, Counterman teaches the controller managing

disk array replication by communicating data over all available links in a round-robin

order over ("during sequential round robin cycles", see col. 10, lines 1-8).

Counterman does not expressly teach identical throughput links (see Table, 1, col. 6,

lines 5-61, where there are a plurality of links with different throughputs).

However, in the same art as noted above, Sharma teaches communicating data over all available links in a round-robin order over identical throughput links (see col. 4, lines 7-15).

One of skill in the art would have been motivated to combine the teachings of Counterman and MacFarlane with the teachings of Sharma, in order to improve the distribution and transfer of frames across a plurality of links having identical transfer speeds.

The combination of Counterman, MacFarlane, and Sharma does not expressly teach the use of a protocol converter.

However, in the same art of network data transferring, Kwon teaches a device and method for transporting and converting protocol messages between network devices on dissimilar networks (see abstract).

One of skill in the would have been motivated to combine the teachings of Counterman with the teachings of Kwon in order to allow for data replication between devices located on dissimilar networks.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brendan Y. Higa whose telephone number is (571)272-5823. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (571)272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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BYH

GLENTON B. BURGESS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100